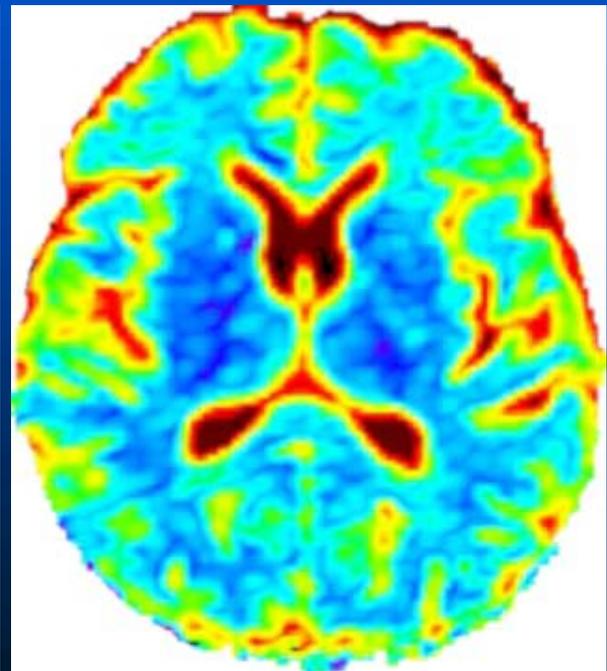
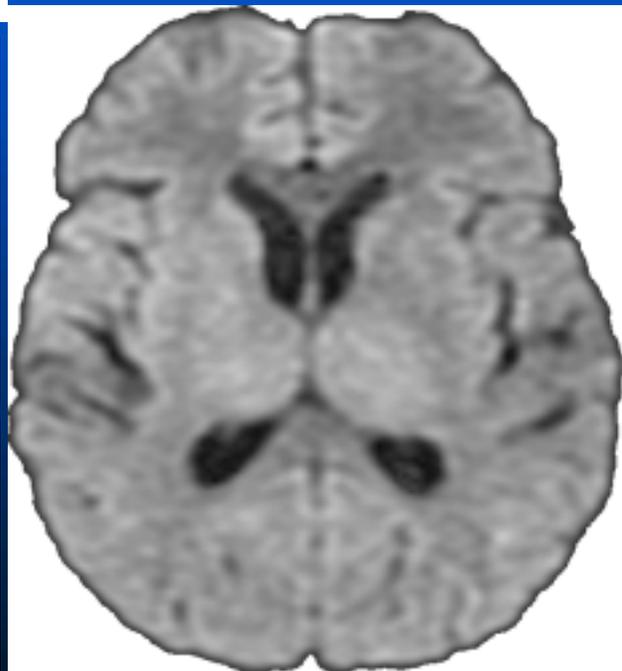
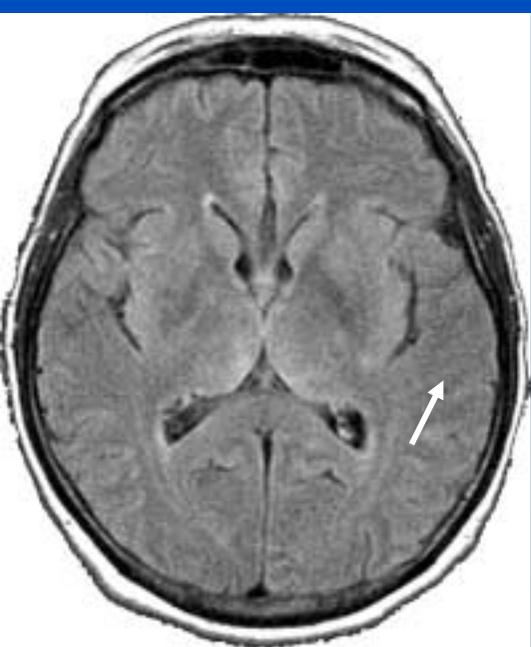
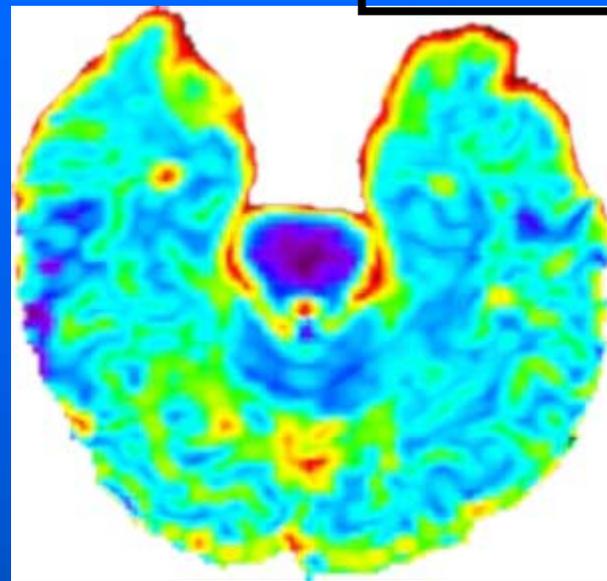
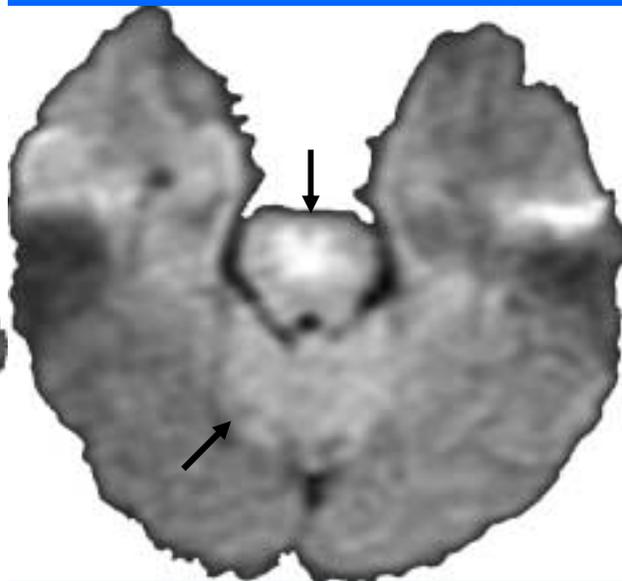


# **WEST NILE VIRUS INFECTION IN SOLID ORGAN TRANSPLANT RECIPIENTS**

**Deepali Kumar MD MSc FRCPC  
Multi-organ Transplant & Infectious  
Diseases  
University of Toronto, Canada**

# Case

- 58 y.o. woman OLTx 2 years ago
- Well since transplant; On cyclosporin and MMF.
- Not working; ++ outdoor activity / recent cottage visit (no protection measures).
- Fever and chills then confusion and a headache.
- LP: WBC 58 mil/L and elevated protein (0.6 g/L).

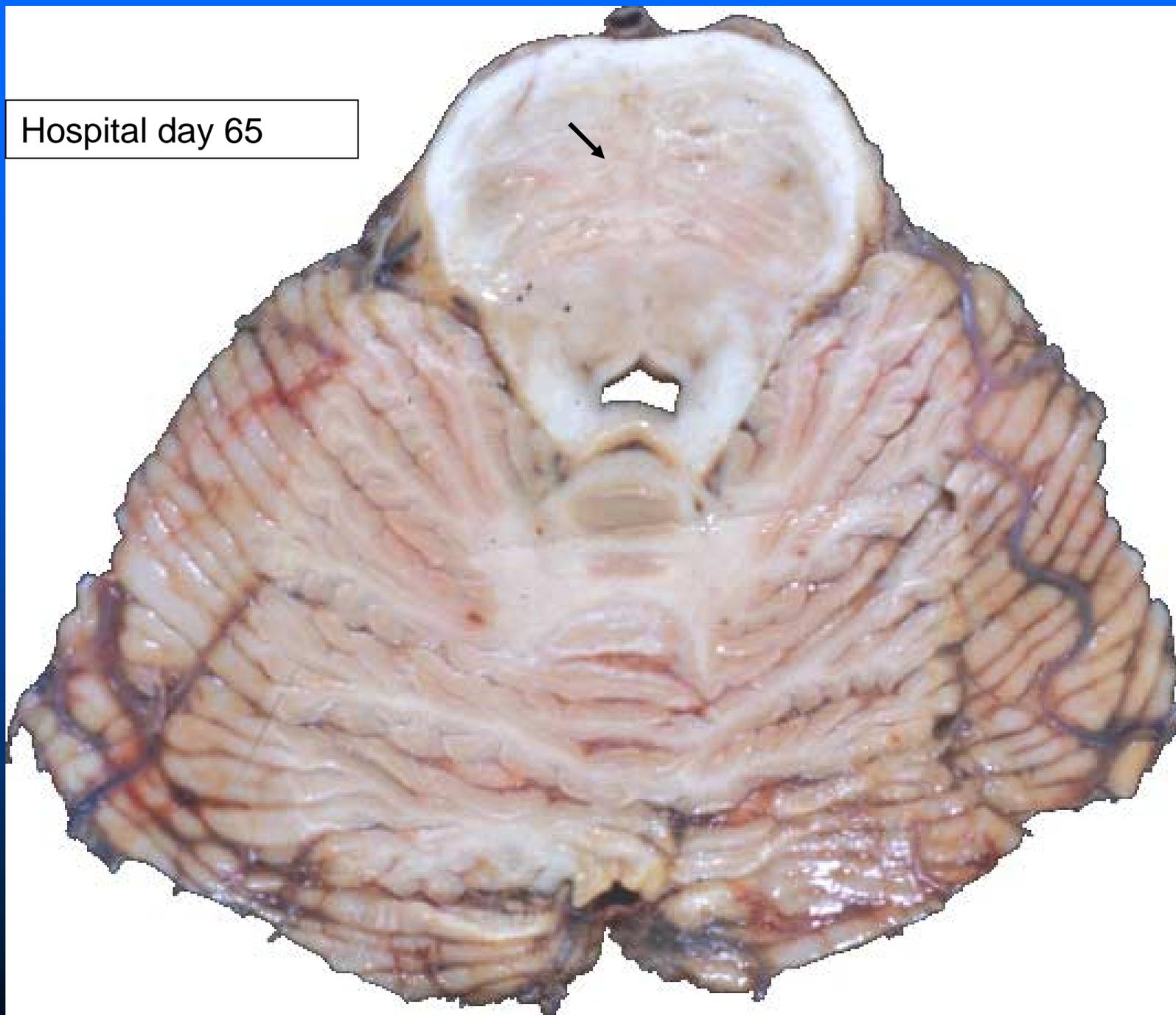


FLAIR

DWI

ADC

Hospital day 65

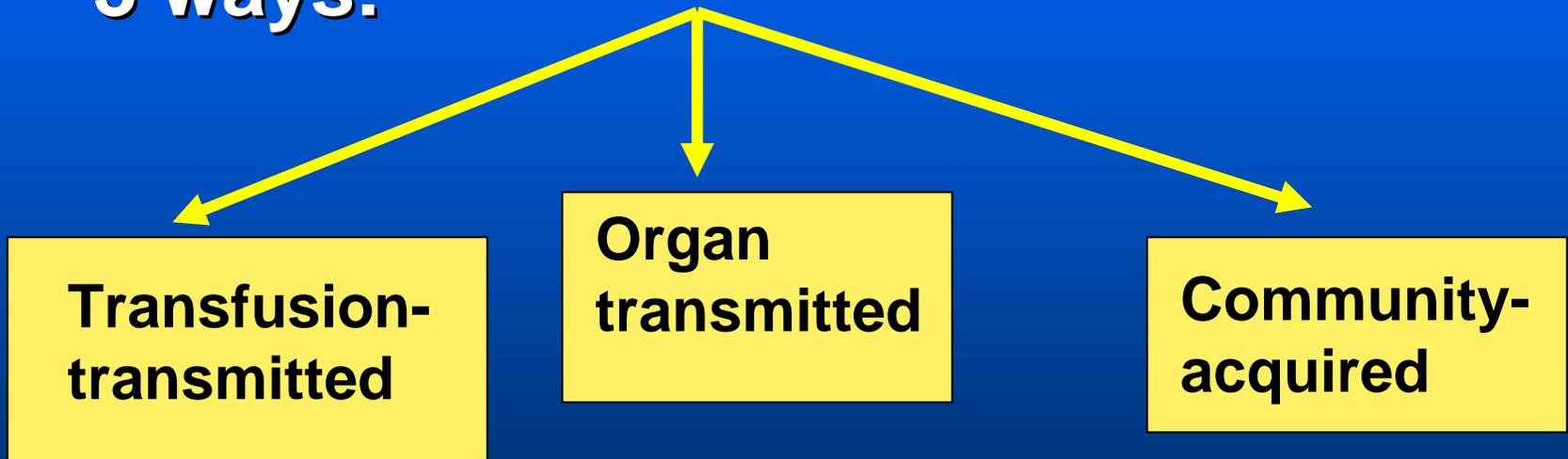


# Delayed Seroconversion

- **WNV serology negative initially – positive 1 month later**

# WNV in Transplantation

- Transplant patients can acquire WNV in 3 ways:



# **WNV: TRANSFUSION TRANSMITTED**

- **23 cases of TTWNV (2002)**
  - **10 patients Immunocompromised (cancer,transplant)**
  - **2 patients were organ transplants (liver/kidney)**

# **WNV: ORGAN DONOR TRANSMITTED**

- **Case with TTWNV, was an organ donor**
  - 2 kidneys
  - Liver
  - Heart
  
- **3 / 4 recipients meningoencephalitis**
  - 1 WNV fever
  - 7-17 days post-transplant
  - 1 death

# Community-acquired WNV

Case #	Tx	Serology	Presentation	Exposure
1	Liver	IgM/IgG positive but delayed	Encephalitis	Cottage visit
2	Kidney	IgM/IgG positive	Encephalitis	Outdoor occupation
3	Heart	IgM/IgG positive	Meningitis	Outdoor occupation
4	Kidney	IgM/IgG positive	Encephalitis/ Flaccid paralysis	Cottage visit

# Community-acquired WNV

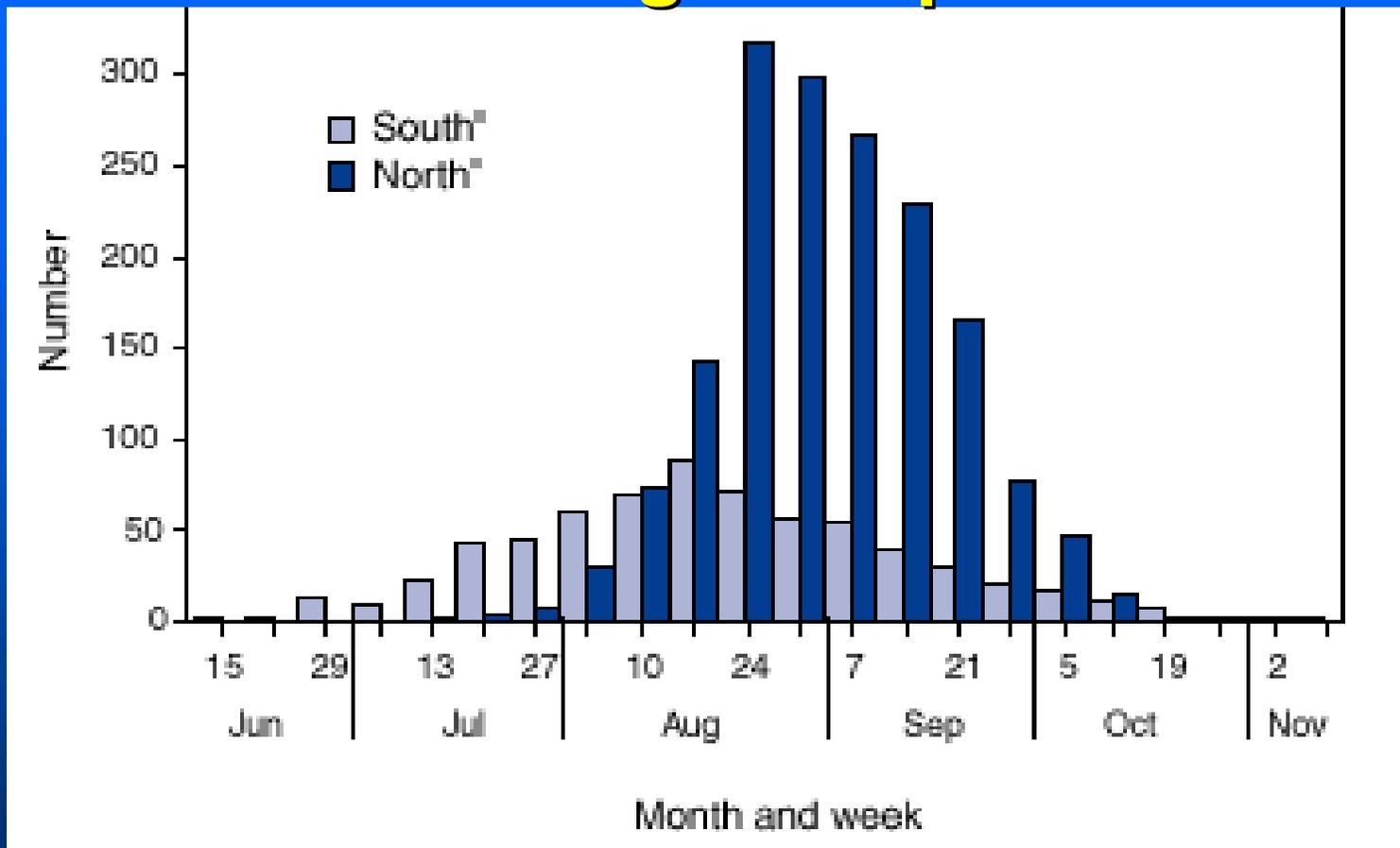
- 28 cases in transplant patients in the literature
- Majority have meningoencephalitis
- What is the risk of neurologic disease in an organ transplant recipient?

# **A Seroprevalence Study of West Nile Virus in Solid Organ Transplant Recipients**

**D Kumar, M Drebot, SJ Wong, G Lim, H  
Artsob, P Buck, A Humar**

**Infectious Diseases & Multi-organ Transplant, University of  
Toronto, Canada; National Microbiology Laboratory, Winnipeg;  
Centre for Infectious Disease Prevention and Control, Ottawa;  
New York State Dept. of Health, New York**

# USA WNV Meningoencephalitis 2002



**CANADA – first ever WNV in 2002 – large epidemic in the Toronto Area (~400 cases of mostly meningoencephalitis)**

# **Community Acquired Seroprevalence**

- **Seroprevalence study of 816 organ transplant patients following the 2002 epidemic**
- **All patients enrolled in Oct 2002; outpatients only**
- **IgG, IgM testing, confirmed by PRNT**
- **Questionnaire on knowledge and behavior patterns**
  - **This followed specific educational attempts by the transplant program in August and September**

# Outpatient serosurvey positive

Case #	Tx	Serology	Presentation	Exposure
1	Liver	IgM/IgG positive	Febrile illness/muscle weakness	Recreational outdoor activity
2	Liver	IgM/IgG positive	Febrile illness	Recreational outdoor activity
3	Kidney	IgM negative IgG positive	Asympt.	No exposures; foreign born

# Community Acquired WNV

- The seroprevalence of IgM antibody to West Nile was 2/816 (0.25%;95%CI 0.03-0.88%)
- Based on application of the seroprevalence data to our population of ~ 2500 transplant patients, and using data from hospital based surveillance of meningoencephalitis...

# Community Acquired WNV

- The estimated risk of meningoencephalitis in a transplant patient infected with WNV is 40% (95%CI 16-80%).
- **MUCH HIGHER RATE OF SEVERE DISEASE VS. GENERAL POPULATION (< 1%)**

# BEHAVIOUR PATTERNS

Variable	Number of patients (%)
Occupation	
Not working	353/619 (57.0)
Indoors primarily	254/619 (41.0)
Outdoors primarily	12/619 (1.9)
Length of time outdoors	
< 1 hour dusk or dawn	393/737 (53.3)
1-2 hours dusk or dawn	198/737 (26.9)
> 2 hours dusk or dawn	146/737 (19.8)
Reported seeing a dead bird	Yes: 133/754 (17.6) No: 621/754 (82.4)

# Knowledge / Behaviors

Variable	Number of patients (%)
Had heard of West Nile virus	Yes 679/757 (89.7) No 78/757 (10.3)
Knew at least one protective measure	Yes 428/757 (56.5) No 335/757 (44.3)
Acted on at least one protective measure	Yes 342/757 (45.2) No 422/757 (55.7)
Used insect repellent when outdoor	Sometimes or often: 250/752 (33.2) Never: 502/752 (66.8)

# How can we prevent WNV transmission in transplantation?

- Blood screening
- Careful donor screening
  - Clinical screening
  - LRDs: avoid high risk activities and use personal protection measures for 2 weeks prior to donation
  - OPTN does not currently recommend NAT testing
  - In our province, all donors are tested

# How can we prevent WNV transmission in transplantation?

- Patient education
  - More severe disease in those on immunosuppression
  - Protection against mosquitoes
  - Reminder letter sent at the beginning of mosquito season
- Vaccines?
  - Not live